

Village of
Midlothian
Stormwater
Management
Capital Plan

Executive
Summary

April 2019



1.01 EXECUTIVE SUMMARY

The Village of Midlothian Stormwater Management Capital Plan evaluates stormwater flooding issues and mitigation opportunities, prioritizes these opportunities based on Village goals and values, and provides opinions of cost for select projects that will allow the Village to plan for funding and implementation of stormwater and flood control initiatives.

The plan was developed through a partnership with the Village and the Chicago Metropolitan Agency for Planning's (CMAP) Local Technical Assistance program. This effort builds on the goals established in the RainReady Midlothian Plan, which was adopted by the Village in January 2016 and developed through a partnership with the Center for Neighborhood Technology, the United States Army Corps of Engineers, and Floodlothian Midlothian.

Development of the SMCP was a team effort between the Village, the project steering committee, CMAP, and Strand Associates, Inc.® that started in September 2018. The steering committee consisted of representatives from the Village, Floodlothian Midlothian, CNT, the Village Engineer (Robinson Engineering), South Suburban Mayors and Managers Association (SSMMA), and the Metropolitan Water Reclamation District of Greater Chicago (MWRD). Over the course of the planning process, the steering committee met four times to provide guidance and feedback on key deliverables and the project team gave an overview presentation to the Village Board on February 27, 2019.

The plan includes eight sections:

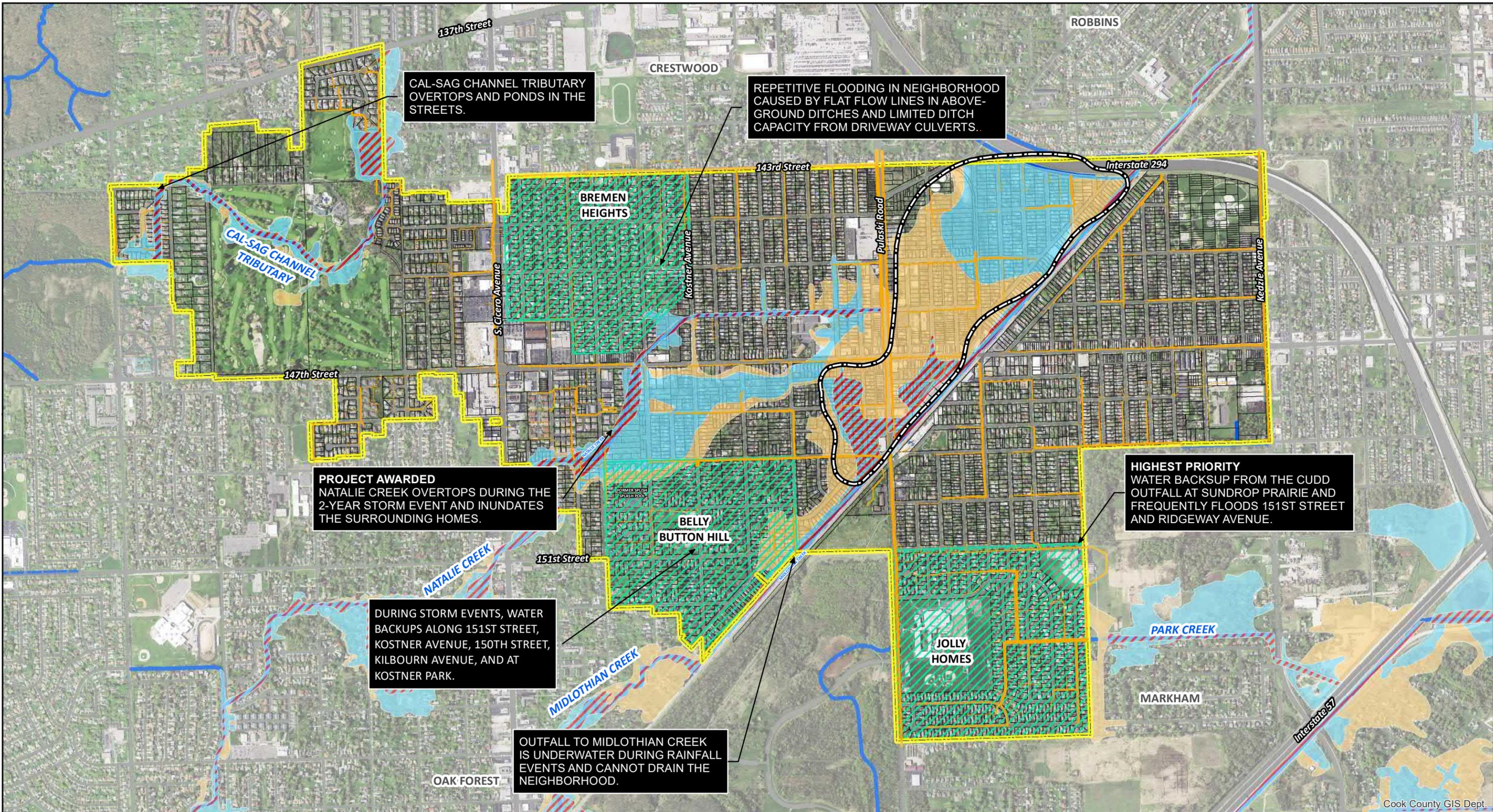
1. Introduction, including this executive summary and a list of abbreviations
2. Village Inventory and Analysis, including background data and maps
3. Previous Reports and Studies, including summaries of existing plans and studies
4. Overview of Flooding Issues and Locations, illustrated on Figure ES-1
5. Focus Area Initial Evaluations, including a summary of flooding issues in Jolly Homes, Belly Button Hill, Bremen Heights, and the Natalie Creek corridor, which are illustrated on Figure ES-2, Figure ES-3, Figure ES-4, and Figure ES-6. Figure ES-5 shows potential improvements at Kolmar Avenue and 145th Street in Bremen Heights.
6. Summary of Potential Opportunities, including descriptions of each opportunity in the section as well as the Opportunity Matrix (Table 1 and Table 2)
7. Prioritization of Potential Opportunities, including a discussion of the criteria used to evaluate and rank each opportunity in the Opportunity Matrix
8. Recommendations and Next Steps, including concept plans for Jolly Homes and Belly Button Hill, funding opportunities, and a schedule for implementation. Concept plans are illustrated on Figure ES-7 and Figure ES-8.

1.02 IMPLEMENTATION SCHEDULE

Implementation of the initial projects in the Jolly Homes and Belly Button Hill focus areas will require coordination of funding, planning, and design activities before the Village can consider proceeding with construction of the improvements outlined in the Opportunity Matrix. Following is an anticipated implementation schedule:

Implementation Schedule		
Task	Year	Cost
Determine Funding (see Section 8.04)	1	\$60,000 to \$80,000
Develop and implement a storm sewer system televising program starting with the Jolly Homes focus area followed by the other focus areas	On going	\$96,000 (Jolly Homes)
Clean storm sewer system as necessary based on televising results	On going	\$131,000
Jolly Homes Focus Area		
<ul style="list-style-type: none"> Begin discussions with the School District for establishment of an intergovernmental agreement (IGA) for proposed improvements on School District property 	1	NA
<ul style="list-style-type: none"> Begin discussions with TNC on collaborative efforts at Central Park Elementary School and Sundrop Prairie. 	1	Ongoing
<ul style="list-style-type: none"> Begin a public information initiative regarding green infrastructure and start to identify property owners along 151st Street willing to participate in green infrastructure improvements 	1	NA
<ul style="list-style-type: none"> Collect general topographic survey data to support hydraulic modeling 	1	\$15,000
<ul style="list-style-type: none"> Develop a hydraulic model of existing conditions for the entire focus area 	1	\$43,000
<ul style="list-style-type: none"> Develop a hydraulic model of proposed conditions incorporating all potential opportunities in the focus area 	1	"
<ul style="list-style-type: none"> Evaluate sizing, location, and effectiveness of the potential opportunities 	1	"
<ul style="list-style-type: none"> Develop a "basis of design" report to guide implementation of opportunities throughout the entire focus area 	1	\$20,000
<ul style="list-style-type: none"> Perform detailed topographic survey for Opportunities 2A, B, and C 	2	\$120,000
<ul style="list-style-type: none"> Develop preliminary engineering drawings, specifications, and OPC 	2	\$107,100
<ul style="list-style-type: none"> Submit for funding as determined 	2	NA
<ul style="list-style-type: none"> Develop pre-final engineering drawings, specifications, and OPC 	2	\$100,000
<ul style="list-style-type: none"> Submit for permits as necessary 	2	\$8,000
<ul style="list-style-type: none"> Finalize engineering drawings, specifications, and OPC 	2	\$18,000
<ul style="list-style-type: none"> Advertise for bids 	3	\$5,800
<ul style="list-style-type: none"> Award contract and finalize funding 	3	NA
<ul style="list-style-type: none"> Construction improvements 	3-4	\$5,425,166
<ul style="list-style-type: none"> Finalize and closeout project and funding documents 	4	NA

Implementation Schedule		
Task	Year	Cost
<i>Belly Button Hill Focus Area</i>		
<ul style="list-style-type: none"> Begin discussions with the Park District for establishment of an intergovernmental agreement (IGA) for proposed improvements on Park District property 	1	NA
<ul style="list-style-type: none"> Collect general topographic survey data to support hydraulic modeling 	3	\$18,000
<ul style="list-style-type: none"> Develop a hydraulic model of existing conditions for the entire focus area 	3	\$50,000
<ul style="list-style-type: none"> Develop a hydraulic model of proposed conditions incorporating all potential opportunities in the focus area 	3	"
<ul style="list-style-type: none"> Evaluate sizing, location, and effectiveness of the potential opportunities 	3	"
<ul style="list-style-type: none"> Develop a "basis of design" report to guide implementation of opportunities throughout the entire focus area 	3	\$20,000
<ul style="list-style-type: none"> Perform detailed topographic survey for Opportunities 3A, B, C, D, and E 	4	\$36,000
<ul style="list-style-type: none"> Develop preliminary engineering drawings, specifications, and OPC 	4	\$31,000
<ul style="list-style-type: none"> Submit for funding as determined 	4	NA
<ul style="list-style-type: none"> Develop pre-final engineering drawings, specifications, and OPC 	4	\$30,000
<ul style="list-style-type: none"> Submit for permits as necessary 	4	\$2,000
<ul style="list-style-type: none"> Finalize engineering drawings, specifications, and OPC 	4	\$6,000
<ul style="list-style-type: none"> Advertise for bids 	5	\$3,000
<ul style="list-style-type: none"> Award contract and finalize funding 	5	NA
<ul style="list-style-type: none"> Construction improvements 	5-6	\$1,720,350
<ul style="list-style-type: none"> Finalize and closeout project and funding documents 	6	NA
<i>Future Implementation</i>		
<ul style="list-style-type: none"> Proceed with data collection and modeling for Bremen Heights 	5	\$85,000
<ul style="list-style-type: none"> Reassess funding capabilities for continued improvements 	5	NA
<ul style="list-style-type: none"> Reassess Opportunity Matrix for prioritization of projects based upon modeling and effectiveness of implemented projects 	6	\$15,000
<ul style="list-style-type: none"> Proceed with engineering for Bremen Heights based on funding and updated prioritization 	6 and beyond	\$2,370,000



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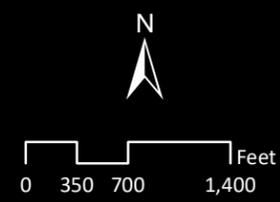


FIGURE ES-1



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LEGEND

- | | | |
|-------------------------|--------------------------------|-------------------|
| ● CATCH BASIN (VILLAGE) | POTENTIAL OPPORTUNITY | ■ PARK FEATURE |
| ○ MANHOLE (VILLAGE) | ■ DETENTION BASIN RETROFIT | ■ PEDESTRIAN PATH |
| — STORM SEWER (VILLAGE) | ■ GREEN INFRASTRUCTURE FEATURE | ■ SHRUB |
| | ■ NEW DETENTION BASIN (DRY) | ■ TREE |
| | ■ NEW DETENTION BASIN (WET) | ■ NEW STORM SEWER |

**POTENTIAL OPPORTUNITIES
JOLLY HOMES NEIGHBORHOOD**

MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
CHICAGO METROPOLITAN AGENCY FOR PLANNING

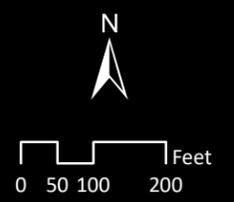
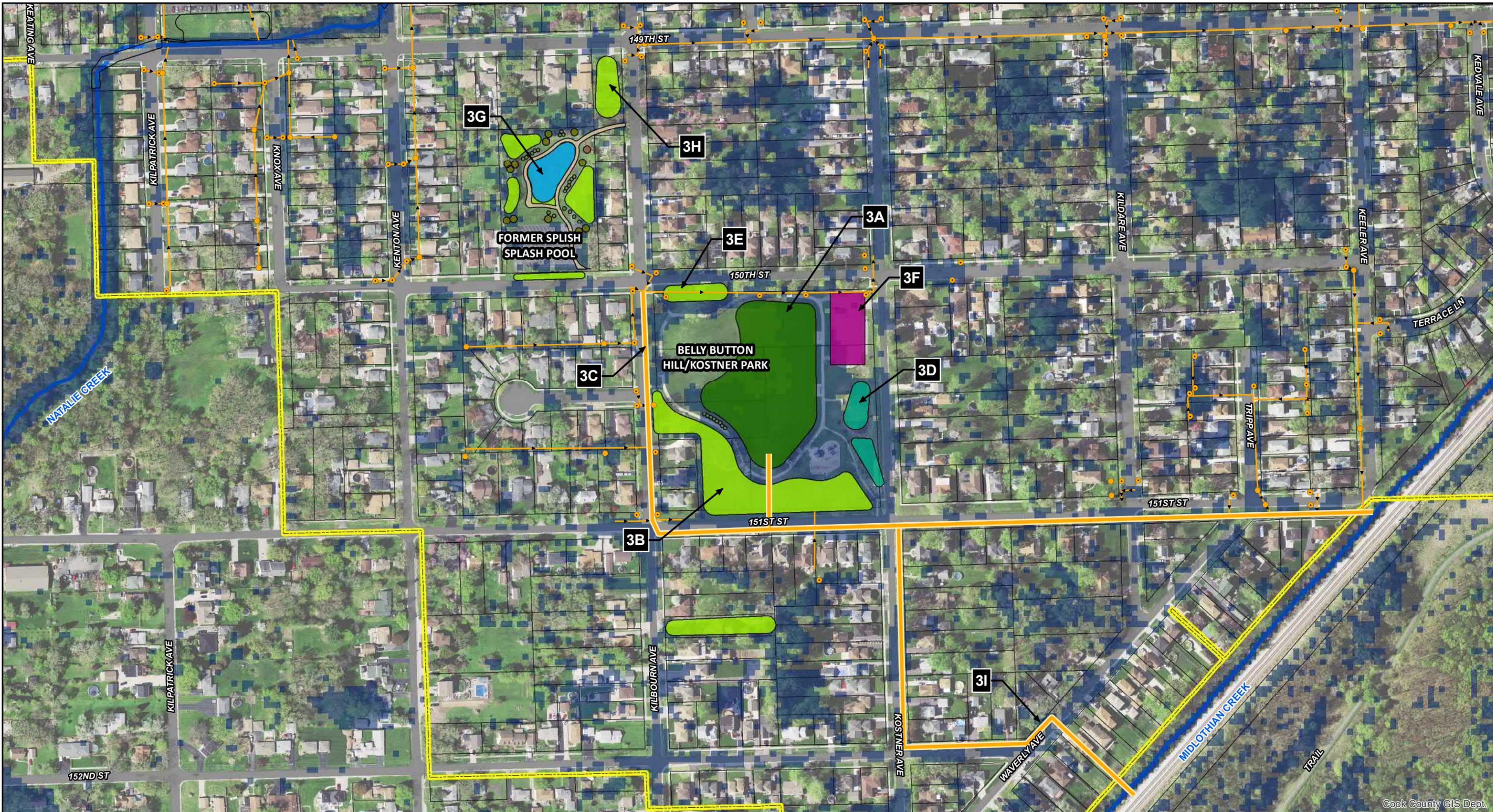


FIGURE ES-2



Cook County GIS Dept.

LEGEND	
●	CATCH BASIN (VILLAGE)
○	MANHOLE (VILLAGE)
—	STORM SEWER (VILLAGE)
—	MIDLOTHIAN MUNICIPAL LIMITS (COOK COUNTY)
—	DEPRESSIONAL AREA (CMAP, ARCHYDRO)
POTENTIAL OPPORTUNITY	
■	PARK FEATURE
■	GREEN INFRASTRUCTURE FEATURE
■	GREEN INFRASTRUCTURE RETROFIT
■	NEW DETENTION BASIN (DRY)
■	NEW DETENTION BASIN (WET)
■	PEDESTRIAN PATH
■	SHRUB
■	TREE
■	UNDERGROUND DETENTION
■	NEW STORM SEWER

POTENTIAL OPPORTUNITIES
BELLY BUTTON HILL NEIGHBORHOOD
 MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
 CHICAGO METROPOLITAN AGENCY FOR PLANNING

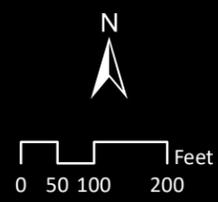
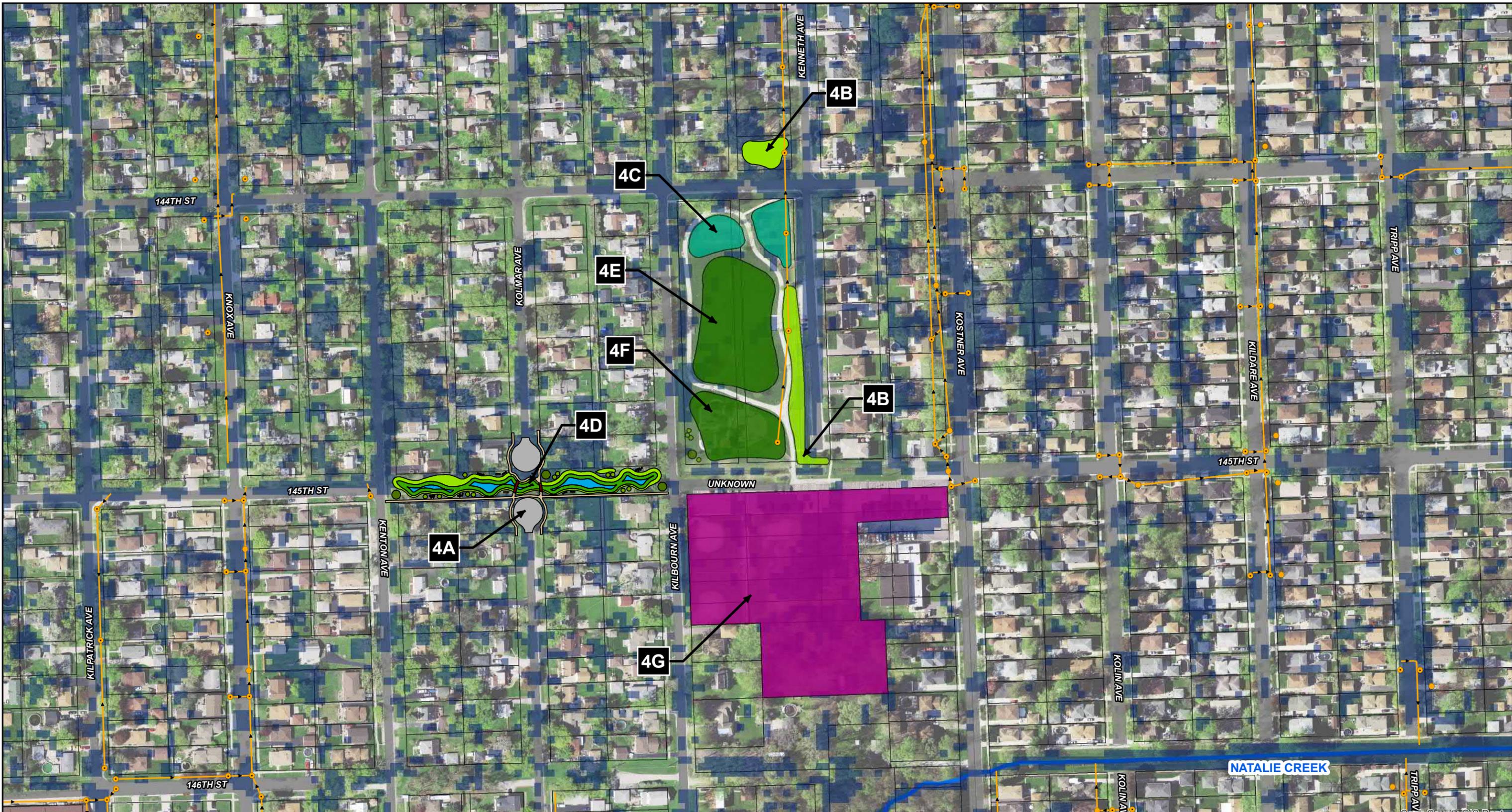


FIGURE ES-3



LEGEND

- CATCH BASIN (VILLAGE)
- MANHOLE (VILLAGE)
- STORM SEWER (VILLAGE)
- ▭ MIDLOTHIAN MUNICIPAL LIMITS (COOK COUNTY)
- ▭ DEPRESSIONAL AREA (CMAP, ARCHYDRO)
- POTENTIAL OPPORTUNITIES**
- ▭ GREEN INFRASTRUCTURE
- ▭ GREEN INFRASTRUCTURE RETROFIT
- ▭ NEW DETENTION BASIN (DRY)
- ▭ NEW DETENTION BASIN (WET)
- ▭ WETLAND BUFFER
- ▭ SHRUB
- ▭ TREE
- ▭ UNDERGROUND DETENTION

**POTENTIAL OPPORTUNITIES
BREMEN HEIGHTS NEIGHBORHOOD**
MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
CHICAGO METROPOLITAN AGENCY FOR PLANNING

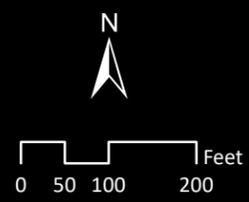
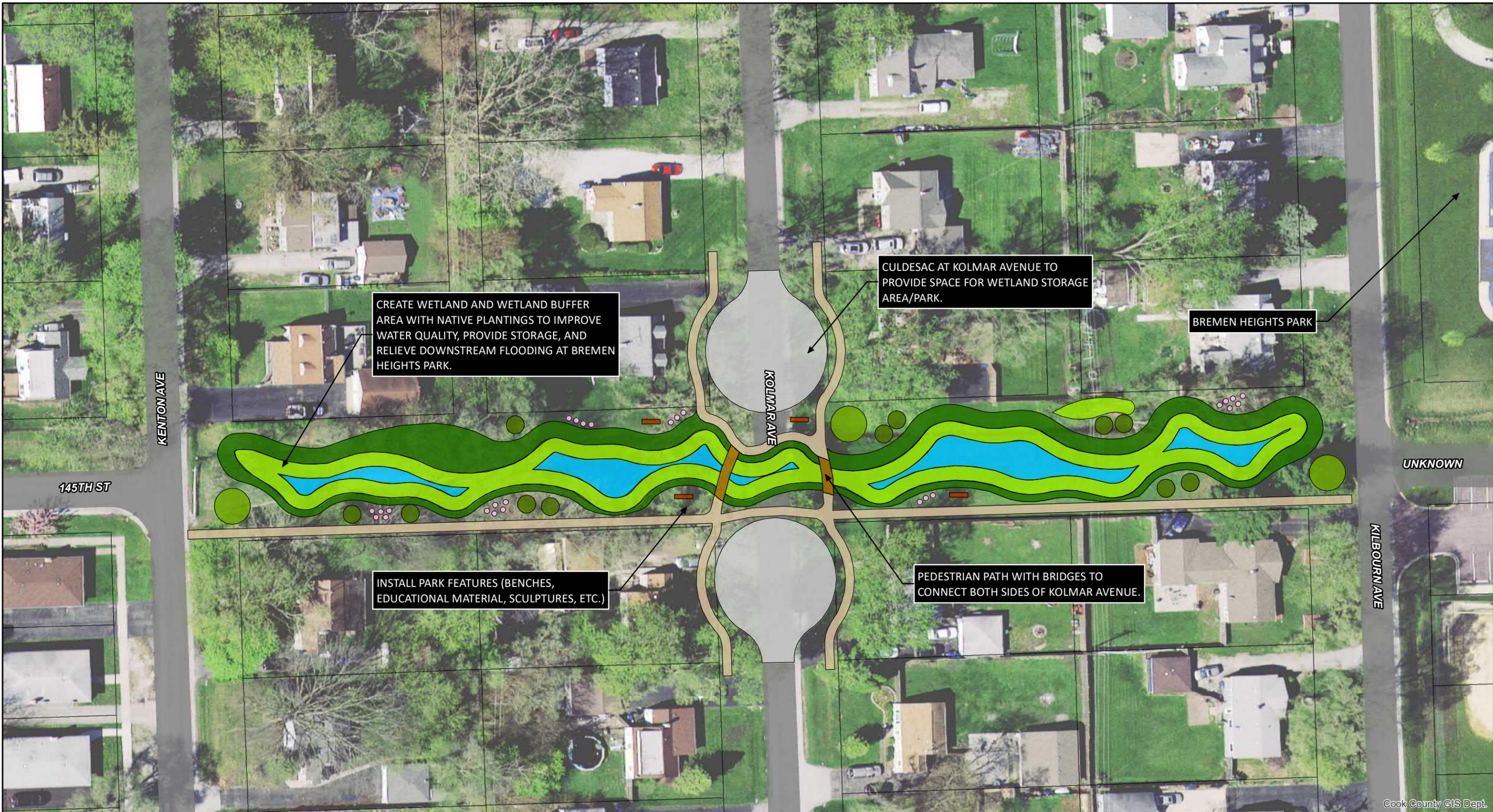


FIGURE ES-4



Cook County GIS Dept.

LEGEND

- MIDLOTHIAN MUNICIPAL LIMITS (COOK COUNTY)
- PEDESTRIAN PATH
- CULDESAC
- PEDESTRIAN BRIDGE
- SHRUB
- TREE
- PLANTER
- GREEN INFRASTRUCTURE / WETLAND BUFFER
- WET FEATURE
- PARK FEATURE
- DRY FEATURE

**POTENTIAL OPPORTUNITIES
INTERSECTION GREEN INFRASTRUCTURE**
MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
CHICAGO METROPOLITAN AGENCY FOR PLANNING

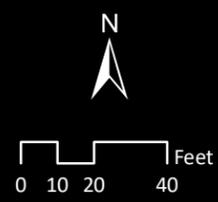
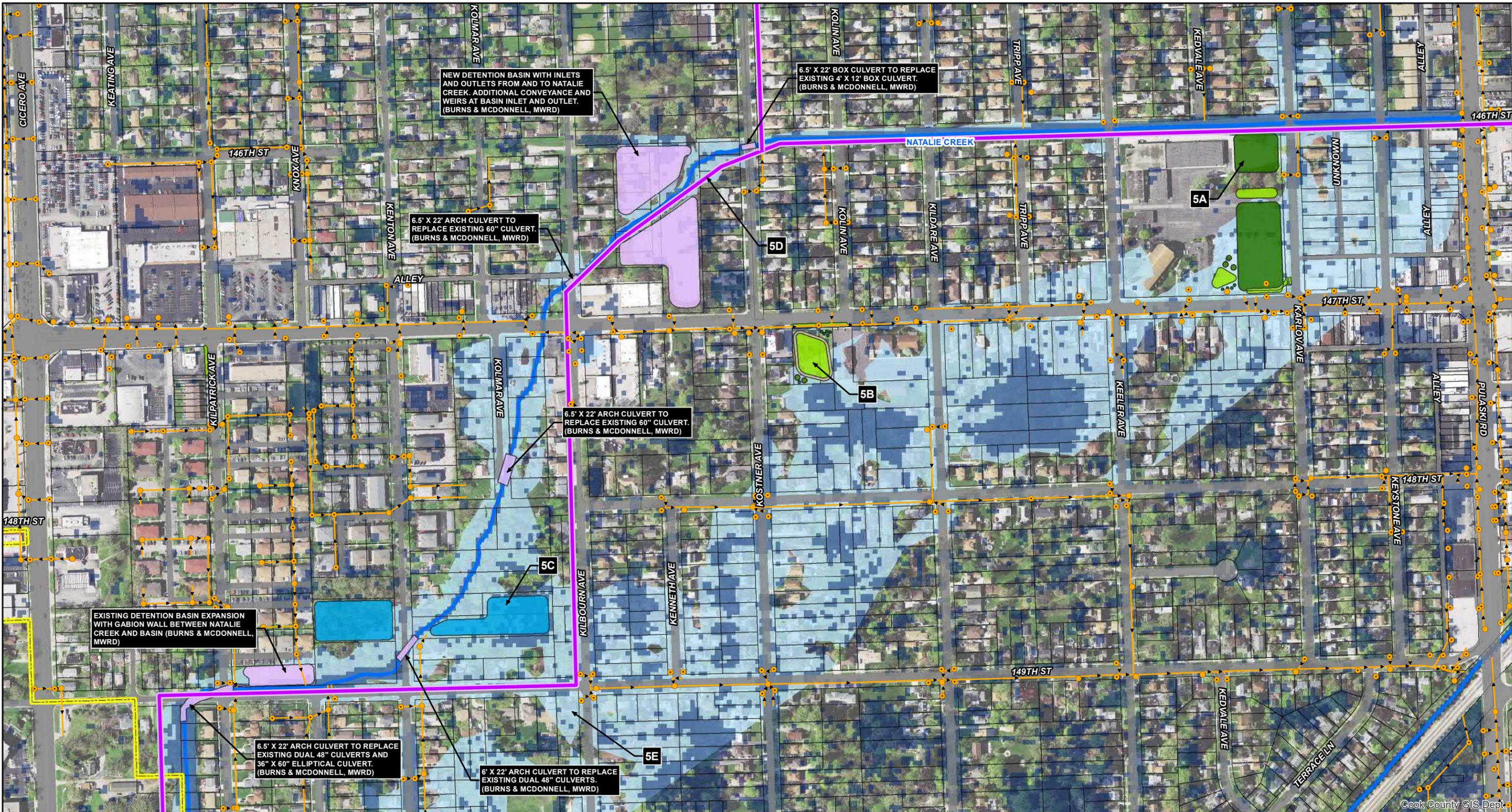


FIGURE ES-5



LEGEND

- CATCH BASIN (VILLAGE)
- MANHOLE (VILLAGE)
- STORM SEWER (VILLAGE)
- ▭ MIDLOTHIAN MUNICIPAL LIMITS (COOK COUNTY)
- ▭ DEPRESSIONAL AREA (CMAP, ARCHYDRO)
- ▭ PROPOSED 100-YEAR FLOODPLAIN (MWRD, NATALIE CREEK PROJECT)
- ▭ PROPOSED TRAIL NETWORK (MWRD, BURNS & MCDONNELL)
- POTENTIAL OPPORTUNITY**
- ▭ GREEN INFRASTRUCTURE FEATURE
- ▭ NEW DETENTION BASIN (WET)
- ▭ NEW DETENTION BASIN (DRY)
- ▭ PATH
- ▭ SHRUB
- ▭ TREE
- ▭ ONGOING NATALIE CREEK PROJECT (MWRD, BURNS & MCDONNELL)

**POTENTIAL OPPORTUNITIES
NATALIE CREEK**

MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
CHICAGO METROPOLITAN AGENCY FOR PLANNING



 0 75 150 300 Feet





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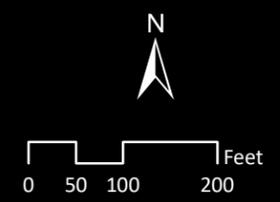
FIGURE ES-6



LEGEND

2A: DETENTION BASIN	WET FEATURE	24-INCH
GREEN INFRASTRUCTURE / WETLAND BUFFER	SHRUB	30-INCH
DRY FEATURE	TREE	36-INCH
	2B: CONVEYANCE UPGRADES	42-INCH
	12-INCH	48-INCH
	18-INCH	2C: GREEN INFRASTRUCTURE

**JOLLY HOMES OPPORTUNITY CONCEPT
OPPORTUNITIES 2A, 2B, AND 2C**
MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
CHICAGO METROPOLITAN AGENCY FOR PLANNING



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FIGURE ES-7



DETENTION BASIN (DRY)
 100-YR HWL: 625.7
 SPILL CREST: 626.0
 BOTTOM OF BASIN: 617.0
 STORAGE 15.8 AC.-FT.
 4:1 (H:V) SIDE SLOPE

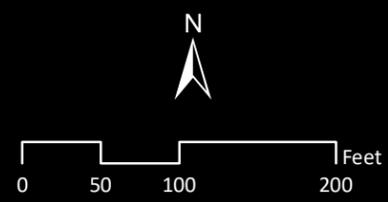
**BELLY BUTTON
 HILL/KOSTNER PARK**

DETENTION BASIN (WET OR DRY)
 100-YR HWL: 626.5
 SPILL CREST: 626.5
 BOTTOM OF BASIN: 621.0
 STORAGE: 4.0 AC.-FT.
 4:1 (H:V) SIDE SLOPE

- LEGEND**
- 3A: DETENTION BASINS
 - GREEN INFRASTRUCTURE / WETLAND BUFFER
 - WET FEATURE
 - DRY FEATURE

**BELLY BUTTON HILL OPPORTUNITY CONCEPT
 OPPORTUNITY 3A**

MIDLOTHIAN STORMWATER MANAGEMENT CAPITAL PLAN
 CHICAGO METROPOLITAN AGENCY FOR PLANNING



Cook County GIS Dept.

FIGURE ES-8

Table 1: Operational and Planning Programs

Note: These opportunities are essential to planning and design and may be completed in conjunction with infrastructure projects.

ID	Priority Area	Name	Stormwater Management Type	Description	Pros	Cons	Estimated Cost
1A	Jolly Homes, Belly Button Hill, and Bremen Heights	Topographic Survey	Planning	Perform topographic surveys and field investigations in each of the focus areas to support detailed planning and design of specific improvements.	<ul style="list-style-type: none"> Fills gaps and provides more understanding to the existing storm sewer system Aids design of future and ongoing infrastructure projects Can be completed in conjunction with infrastructure projects 	<ul style="list-style-type: none"> Does not provide immediate relief to flooding areas 	2% of Project Cost
1B	Jolly Homes, Belly Button Hill, and Bremen Heights	Storm Sewer Televising	Planning	Televise the existing storm sewer system in each focus area to determine if there are any deficiencies in the system.	<ul style="list-style-type: none"> Explores opportunities for immediate fixes to the storm sewer system Can be completed in conjunction with infrastructure projects 	<ul style="list-style-type: none"> Does not provide immediate relief to flooding areas 	Jolly Homes: \$96,000 Belly Button Hill: \$53,000 Bremen Heights: \$63,000
1C	Jolly Homes, Belly Button Hill, and Bremen Heights	Storm Sewer Cleaning	Planning	Clean storm sewer lines in each focus area based on televising results.	<ul style="list-style-type: none"> Provide low cost and immediate fixes to existing storm sewer system Can be completed in conjunction with infrastructure projects 	<ul style="list-style-type: none"> May not resolve all flooding issues 	Jolly Homes: \$131,000 Belly Button Hill: \$70,000 Bremen Heights: \$82,000
1D	Jolly Homes, Belly Button Hill, and Bremen Heights	Hydraulic & Hydrologic (H&H) Modeling	Planning	Model the existing storm sewer system in each focus area. (Includes survey to populate the model)	<ul style="list-style-type: none"> Provides more understanding to the existing storm sewer system Can be completed in conjunction with infrastructure projects and used to inform infrastructure design 	<ul style="list-style-type: none"> Does not provide immediate relief to flooding areas 	Jolly Homes: \$43,000 Belly Button Hill: \$50,000 Bremen Heights: \$47,000
1E	Village-wide	Village Rain Fund	Program	Strategy to generate funding to help Midlothian fight flooding without raising property taxes. See Appendix D for more information.	<ul style="list-style-type: none"> Allocates and prioritizes funds for stormwater management projects Can be pursued concurrently with infrastructure projects 	<ul style="list-style-type: none"> Will take time to establish Requires cooperation from residents as it will be a new fee for stormwater service 	<ul style="list-style-type: none"> IEPA State Revolving Loan Fund
1F	Village-wide	Private Property Home Floodproofing and Lateral Repair Program	Program	Develop a resident floodproofing program concurrent with the PSP for community outreach, financing, and flood mitigation measures to complement I/I repair and downspout disconnection. Program could initially be funded by IEPA's State Revolving Loan Fund.	<ul style="list-style-type: none"> Provides assistance to residents that flood Incentivizes participation through a municipal grant fund accessible to residents Potential to pursue along with Rain Fund Opportunity for residents to combat stormwater issues in the community 	<ul style="list-style-type: none"> Improvements are specific to flooding issues on each individual property Improvements do not provide additional stormwater storage 	<ul style="list-style-type: none"> RainFund/ IEPA State Revolving Loan Fund Individual homeowners Existing Sewer Fund

Table 2: Infrastructure Opportunities

Priority Number	ID	Figure	Priority Area	Name	Stormwater Management Type	Description	Pros	Cons	Potential Funding Sources	Benefitting Properties / Areas	Opportunity Footprint (acres)	Related Planning Programs	Drainage Area Capture	Property Ownership / Land Acquisition	Infiltration Potential	Relative Construction Cost	
1	2A	6.02-1	Jolly Homes	Central Park Elementary School New Detention Basin (East)	Existing Detention Basin Retrofit and New Detention Basin	Retrofit existing dry detention basin east of Central Park Elementary School and extend new footprint to open space just north of Park Creek. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> Provides storage to alleviate flooding along 151st Street Potential partnership with School District 143 and TNC Favorable soils for infiltration Education and partnership opportunity with TNC if designed as a wet detention basin Continued partnership with UIUC and IL-IN Sea Grant 	<ul style="list-style-type: none"> Requires coordination and approval from School District May require pumping Requires maintenance Temporarily disturbs 151st Street and Central Park Elementary School Infiltration options are dependent on soil characteristics 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will alleviate in-street flooding and flooding on private properties for properties along 151st Street and for Central Park Elementary School. May also alleviate flooding at outfall to Park Creek.	5.3	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+		+	-	\$1,288,650
2	2B	6.02-1	Jolly Homes	151st Street Conveyance Upgrades	Conveyance Upgrades	Upgrade the existing mainline along 151st Street and install new inlets and laterals. Includes new conveyance to detention basins.	<ul style="list-style-type: none"> Alleviates flooding along 151st Street Can be completed in conjunction with other projects (i.e. 2A, 2C, and roadway projects) 	<ul style="list-style-type: none"> Temporarily disturbs 151st Street and Central Park Elementary School Potential impacts to mature trees 	<ul style="list-style-type: none"> Village 	Will alleviate in-street flooding and flooding on private properties for properties along 151st Street and for Central Park Elementary School.	2.4	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	+	N/A	-	\$3,693,682
3	2C	6.02-1	Jolly Homes	151st Street Green Infrastructure	Green Infrastructure	Install green infrastructure along 151st Street in existing right-of-way.	<ul style="list-style-type: none"> Water quality Enhances aesthetics Reduces need for stormwater storage Favorable soils for infiltration Continued partnership with UIUC and IL-IN Sea Grant Can be completed in conjunction with other projects (i.e., 2A, 2B, and roadway projects) 	<ul style="list-style-type: none"> Limited stormwater storage volume Infiltration options are dependent on soil characteristics Requires maintenance Temporarily disturbs 151st Street Potential impacts to mature trees 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide extra storage to relieve in-street flooding along 151st Street.	0.7	<ul style="list-style-type: none"> Topographic survey 	-	+	+		\$1,040,000
4	3A	6.03-1	Belly Button Hill	Belly Button Hill/ Kostner Park New Dry Detention Basin	New Dry Detention Basin	Design and construct new dry detention basin at Belly Button Hill Park. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> Provides storage to alleviate flooding along 150th Street, Kilbourn Avenue, Kostner Avenue, and 151st Street Potential partnership with Park District to create new park feature in conjunction with detention basin 	<ul style="list-style-type: none"> Requires coordination and approval from Park District May require pumping Requires maintenance Temporarily disturbs Kostner Park and surrounding streets 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will alleviate in-street flooding along 150th Street, Kilbourn Avenue, Kostner Avenue, and 151st Street.	2.4	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+		-	-	\$1,824,760

Table 2: Infrastructure Opportunities

Priority Number	ID	Figure	Priority Area	Name	Stormwater Management Type	Description	Pros	Cons	Potential Funding Sources	Benefitting Properties / Areas	Opportunity Footprint (acres)	Related Planning Programs	Drainage Area Capture	Property Ownership / Land Acquisition	Infiltration Potential	Relative Construction Cost	
5	3B	6.03-1	Belly Button Hill	Belly Button Hill/ Kostner Park Bioretention Basin	Green Infrastructure	Utilize open space at the southern portion of Belly Button Hill Park for a bioretention basin to capture and store runoff from 151st Street.	<ul style="list-style-type: none"> Alleviates flooding along 151st Street and Kostner Avenue Water quality Enhances aesthetics Provides buffer between private properties and park Reduces need for stormwater storage Can be completed in conjunction with other projects (i.e., 3A, 3C, 3E, and roadway projects) 	<ul style="list-style-type: none"> Requires coordination and approval from Park District Limited stormwater storage volume Requires maintenance Potential impacts to mature trees Reduces amount of open space for recreation Temporarily disturbs Kostner Park and surrounding streets Poor infiltration 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide extra storage to relieve flooding at Kostner Park and in-street flooding along 151st Street and Kostner Avenue.	1.5	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+		-	-	\$1,270,000
6	3C	6.03-1	Belly Button Hill	Belly Button Hill/ Kostner Park Conveyance Upgrades	Conveyance Upgrades	Upgrade the existing mainline along Kilbourn Avenue, install new inlets and laterals, and construct new mainline along 151st Street from Belly Button Hill Park to Midlothian Creek. Includes new conveyance to basin.	<ul style="list-style-type: none"> Alleviates flooding along 150th Street, Kilbourn Avenue, Kostner Avenue, and 151st Street Can be completed in conjunction with other projects (i.e., 3A, 3B, 3E, and roadway projects) 	<ul style="list-style-type: none"> Temporarily disturbs 150th Street, Kilbourn Avenue, Kostner Avenue, and 151st Street Potential impacts to mature trees 	<ul style="list-style-type: none"> Village 	Will alleviate in-street flooding along 150th Street, Kilbourn Avenue, Kostner Avenue, and 151st Street.	4.1	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	+	N/A	-	\$2,490,000
7	3D	6.03-1	Belly Button Hill	Belly Button Hill/ Kostner Park Green Infrastructure Retrofit	Green Infrastructure Retrofit	Retrofit existing green infrastructure east of Belly Button Hill/ Kostner Park for increased storage.	<ul style="list-style-type: none"> Alleviates flooding along Kostner Avenue Water quality Enhances aesthetics Reduces need for stormwater storage in some areas Can be completed in conjunction with other projects (i.e., 3A, 3C, 3E, and roadway projects.) 	<ul style="list-style-type: none"> Requires coordination and approval from Park District Limited stormwater storage volume Requires maintenance Poor infiltration 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will increase storage of existing green infrastructure features to relieve in-street flooding along Kostner Avenue.	0.3	<ul style="list-style-type: none"> Topographic survey 	-		-	+	\$270,000
8	3E	6.03-1	Belly Button Hill	Kilbourn Avenue and 150th Street Green Infrastructure	Green Infrastructure	Install green infrastructure in existing right-of-way and park property at the intersection of Kilbourn Avenue and 150th Street.	<ul style="list-style-type: none"> Water quality Enhances aesthetics Reduces need for stormwater storage Potential partnership with Park District 	<ul style="list-style-type: none"> Limited stormwater storage volume Poor infiltration Requires maintenance 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide extra storage to relieve in-street flooding at Kilbourn Avenue and 150th Street.	0.2	<ul style="list-style-type: none"> Topographic survey 	-		-	+	\$160,000

Table 2: Infrastructure Opportunities

Priority Number	ID	Figure	Priority Area	Name	Stormwater Management Type	Description	Pros	Cons	Potential Funding Sources	Benefitting Properties / Areas	Opportunity Footprint (acres)	Related Planning Programs	Drainage Area Capture	Property Ownership / Land Acquisition	Infiltration Potential	Relative Construction Cost	
9	4A	6.04-1	Bremen Heights	Kolmar Avenue and 145th Street Green Corridor	Green Infrastructure	Close intersection at Kolmar Avenue and 145th Street and construct cul-de-sacs at Kolmar Avenue. Utilize green space to create new bioretention basin/wetland corridor to provide increased storage.	<ul style="list-style-type: none"> Provides storage to alleviate downstream flooding along 145th St and Kenneth Ave Public right-of-way Provides opportunity for a new park space Enhances aesthetics Water quality Opportunity for habitat restoration Provides traffic calming Favorable soils for infiltration 	<ul style="list-style-type: none"> Requires coordination and approval from Park District Limited stormwater storage volume Permanently changes Village road network Requires cooperation from neighbors Requires maintenance Infiltration options are dependent on soil characteristics 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will alleviate downstream in-street flooding along 145th Street and Kenneth Avenue and flooding at Bremen Heights Park.	1.3	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 		+	+	-	\$1,730,000
10	4B	6.04-1	Bremen Heights	Bremen Heights Park Green Infrastructure	Green Infrastructure	Install green infrastructure in existing right-of-way and Bremen Heights Park along Kenneth Avenue.	<ul style="list-style-type: none"> Water quality Enhances aesthetics Reduces need for stormwater storage Favorable soils for infiltration Continued partnership with UIUC and IL-IN Sea Grant Can be completed in conjunction with other projects (i.e., 4C, 4E, 4F, roadway projects, and new conveyance) 	<ul style="list-style-type: none"> Requires coordination and approval from Park District Limited stormwater storage volume Requires maintenance Potential impacts to mature trees Temporarily disturbs Bremen Heights Park and surrounding streets Infiltration options are dependent on soil characteristics 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide relief from in-street flooding along Kenneth Avenue.	0.3	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	-		+	+	\$270,000
11	4C	6.04-1	Bremen Heights	Bremen Heights Park Green Infrastructure Retrofit	Green Infrastructure Retrofit	Retrofit existing green infrastructure on north side of Bremen Heights park for increased storage.	<ul style="list-style-type: none"> Water quality Enhances aesthetics Reduces need for stormwater storage Favorable soils for infiltration Continued partnership with UIUC and IL-IN Sea Grant Can be completed in conjunction with other projects (i.e., 4B, 4E, 4F, roadway projects, and new conveyance) 	<ul style="list-style-type: none"> Requires coordination and approval from Park District Limited stormwater storage volume Requires maintenance Infiltration options are dependent on soil characteristics 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will increase storage of existing green infrastructure features to relieve in-street flooding at Bremen Heights Park and along 144th Street.	0.4	<ul style="list-style-type: none"> Topographic survey 	-		+	+	\$370,000

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12	5A	6.05-1	Natalie Creek /147th Street	St. Christopher Church and School Dry Detention Basins	New Dry Detention Basin	Constructing two new detention basins at St. Christopher Church and School property. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> Provides storage to alleviate flooding along 147th Street, Keeler Avenue, and Karlov Avenue Prevent overland flow from Natalie Creek during storm events and protect homes in 100-year floodplain Could be designed as wet basin to provide water quality, habitat, and aesthetic benefits 	<ul style="list-style-type: none"> Expensive to construct large detention basins Would require land acquisition and approval from St. Christopher Church Basins are mostly downstream of overland flow from Natalie Creek Requires maintenance 	<ul style="list-style-type: none"> MWRD Village Grants and partnerships 	Will alleviate in-street flooding along 147th Street, Keeler Avenue, and Karlov Avenue from localized conveyance issues.	1.7	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	-	-	\$760,000
13	5B	6.05-1	Natalie Creek /147th Street	147th Street Green Infrastructure	Green Infrastructure	Installing green infrastructure features along 147th Street, at Kolin Avenue and Kilpatrick Avenue, to alleviate small localized flooding. Some of these features are within the resultant 100-year Natalie Creek floodplain.	<ul style="list-style-type: none"> Opportunity to utilize right-of-way Partnership with property owners Water quality Enhances aesthetics Reduces need for stormwater storage Can be completed in conjunction with other projects (i.e., IDOT roadway projects and complete street improvements) 	<ul style="list-style-type: none"> Requires coordination and approval from property owners and IDOT Green infrastructure alone will not provide the required storage volume to solve the Village's flooding issues Requires maintenance 	<ul style="list-style-type: none"> MWRD's GI Grant Program Village Other grants and partnerships Property owners 	Will help alleviate localized in-street flooding along 147th Street.	0.5	<ul style="list-style-type: none"> Topographic survey 	-	-	\$570,000	
14	2D	6.02-1	Jolly Homes	Central Park Elementary School New Dry Detention Basin (Southwest)	New Dry Detention Basin	Design and construct new dry detention basin southwest of Central Park Elementary School. Includes opportunities for additional conveyance to basin. See also 2A and 2B.	<ul style="list-style-type: none"> Provides storage to alleviate flooding along 151st Street Potential partnership with School District Favorable soils for infiltration Opportunity to include elements from 2E 	<ul style="list-style-type: none"> Requires coordination and approval from School District May require pumping Requires maintenance Temporarily disturbs 151st Street and Central Park Elementary School Infiltration options are dependent on soil characteristics 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will alleviate in-street flooding and flooding on private properties for properties along 151st Street and for Central Park Elementary School.	2.7	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	+	-	\$1,160,000

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15	2E	6.02-1	Jolly Homes	Central Park Elementary School Green Infrastructure	Green Infrastructure	Install green infrastructure southeast of Central Park Elementary School.	<ul style="list-style-type: none"> Outdoor education Water quality Enhances aesthetics Reduces need for stormwater storage Favorable soils for infiltration Continued partnership with UIUC, IL-IN Sea Grant, and TNC Can be completed in conjunction with other projects (i.e., 2A, 2B, 2C, and roadway projects) 	<ul style="list-style-type: none"> Requires coordination and approval from School District Limited stormwater storage volume Infiltration options are dependent on soil characteristics Requires maintenance Area is far from school compared to 2D 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide extra storage to relieve flooding at outfall to Park Creek.	0.9	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	-		+	\$760,000	
16	2F	6.02-1	Jolly Homes	Infiltration Opportunities and Sundrop Prairie Groundwater Recharge	Green Infrastructure	Future opportunities for TNC to restore property could have a beneficial impact in the Jolly Homes neighborhood. Recreating a natural wetland on proper adjacent to Sundrop Prairie would capture and absorb runoff that naturally flows to the prairie.	<ul style="list-style-type: none"> Partnership with TNC Favorable soils for infiltration Water quality Opportunities for public engagement and education Continued partnership with UIUC and IL-IN Sea Grant 	<ul style="list-style-type: none"> Does not provide stormwater or flood control improvements for the Village Infiltration options are dependent on soil characteristics 	<ul style="list-style-type: none"> MWRD's GI Grant Program Village Grants and partnerships 	May provide additional flood mitigation during extreme events (beyond 100-year design) for the 151st Street drainage area. May also reduce impacts from Park Creek during these events.	16.9	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+		+	-	\$14,750,000
17	2G	6.02-1	Jolly Homes	Central Park Avenue Bioretention Basin	Bioretention Basin	Utilize vacant property at 151st Street and Central Park Avenue to construct a new bioretention system.	<ul style="list-style-type: none"> Water quality Enhances aesthetics Reduces need for stormwater storage Favorable soils for infiltration Continued partnership with UIUC and IL-IN Sea Grant 	<ul style="list-style-type: none"> Limited stormwater storage volume Infiltration options are dependent on soil characteristics Potential impacts to mature trees Disconnected from main flooding issues along 151st Street Requires maintenance 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will help alleviate in-street flooding along Central Park Avenue.	0.4	<ul style="list-style-type: none"> Topographic survey 	-	-	+	+	\$370,000
18	2H	6.02-1	Jolly Homes	Jolly Homes South Conveyance Upgrades	Upgrade Existing Storm Sewer	Upgrade the existing mainline midblock of Hamlin, Ridgeway, Lawndale, and Millard Avenues and install new inlets and laterals.	<ul style="list-style-type: none"> Alleviates flooding upstream of Park Creek Can be completed in conjunction with project 2I and roadway projects 	<ul style="list-style-type: none"> Temporary impacts to mature trees 	<ul style="list-style-type: none"> Village of Midlothian 	Will alleviate in-street flooding upstream of Park Creek.	3.4	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	+	N/A	-	\$3,000,000

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19	2I	6.02-1	Jolly Homes	Bremen High School Detention Basin Retrofit (East)	Existing Basin Retrofit	Retrofit existing basin east of Bremen Community High School (at playing fields) for increased storage. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> • Potential to reroute flooding from 152nd Street and school • Potential partnership with School District • Quick turnaround in design to construction • Favorable soils for infiltration 	<ul style="list-style-type: none"> • Requires coordination and approval from School District 228 • Disrupts recent detention basin design 	<ul style="list-style-type: none"> • Village • MWRD • Grants and partnerships (School District) 	Will alleviate in-street flooding along 152nd Street and Hamlin Avenue.	1.0	<ul style="list-style-type: none"> • Storm sewer televising and cleaning • Topographic survey • Storm sewer modeling 	+		+	+	\$30,000
20	2J	6.02-1	Jolly Homes	Bremen High School Detention Basin Retrofit (West)	Existing Basin Retrofit	Retrofit existing basin west of Bremen Community High School (at Pulaski Road) for increased storage. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> • Potential to reroute flooding from 152nd Street and school • Potential partnership with School District • Quick turnaround in design to construction • Favorable soils for infiltration 	<ul style="list-style-type: none"> • Requires coordination and approval from School District 228 	<ul style="list-style-type: none"> • Village • MWRD • Grants and partnerships (School District) 	Will alleviate in-street flooding along 152nd Street and provide storage to Pulaski Road.	1.0	<ul style="list-style-type: none"> • Storm sewer televising and cleaning • Topographic survey • Storm sewer modeling 			+	+	\$10,000
21	2K	6.02-1	Jolly Homes	152nd Street Green Infrastructure	Green Infrastructure	Install green infrastructure along 152nd Street in existing right-of-way and Bremen Community High School property.	<ul style="list-style-type: none"> • Water quality • Enhances aesthetics • Reduces need for stormwater storage • Favorable soils for infiltration • Continued partnership with UIUC and IL-IN Sea Grant • Potential partnership with School District • Can be completed in conjunction with other projects like 2I, 2J, and roadway projects 	<ul style="list-style-type: none"> • Limited stormwater storage volume • Infiltration options are dependent on soil characteristics • Requires coordination and approval from School District 228 • Requires maintenance 	<ul style="list-style-type: none"> • Village • MWRD • Grants and partnerships (School District) 	Will provide extra storage to relieve in-street flooding along 152nd Street.	0.7	<ul style="list-style-type: none"> • Topographic survey 	-		+		\$640,000
22	2L	6.02-1	Jolly Homes	Jolly Homes Vacant Property Green Infrastructure	Green Infrastructure	Install green infrastructure on vacant properties where opportunities exist.	<ul style="list-style-type: none"> • Water quality • Enhances aesthetics • Community engagement • Reduces need for stormwater storage • Favorable soils for infiltration 	<ul style="list-style-type: none"> • Limited stormwater storage volume • Vacant parcels are not in proximity to severe flooding areas • Requires maintenance 	<ul style="list-style-type: none"> • Village • MWRD • Grants and partnerships 	Will provide extra storage to relieve in-street flooding throughout neighborhood.	1.0	<ul style="list-style-type: none"> • Topographic survey 	-	-	+	-	\$1,030,000

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23	3F	6.03-1	Belly Button Hill	Belly Button Hill/ Kostner Park Underground Detention	Underground Detention	Construct underground detention beneath parking lot at in Belly Button Hill/Kostner Park. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> Provides storage to alleviate flooding along 150th Street Combines stormwater storage and parking lot Potential partnership with Park District 	<ul style="list-style-type: none"> More expensive than above ground storage Poor infiltration may require pumping Temporary disruption to park 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide storage to alleviate in-street flooding along Kostner Avenue, 150th Street, and at Belly Button Hill/ Kostner Park.	0.5	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+		-	-	\$1,070,000
24	3G	6.03-1	Belly Button Hill	Splish Splash Pool Detention Basin	New Wet Detention Basin	Design and construct a new detention basin at old Splish Splash Pool property. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> Provides storage to alleviate flooding at 150th Street and Kilbourn Avenue Potential partnership with Park District to create new park with stormwater features Education and outreach opportunities Opportunity to enhance aesthetics 	<ul style="list-style-type: none"> Requires coordination and approval from Park District High water table in this area may limit depth of detention basin Poor infiltration Requires maintenance Upstream of flooding area; requires new storm sewers to route water to pond 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will alleviate in-street flooding along 150th Street and Kilbourn Avenue. May also alleviate flooding at Belly Button Hill/ Kostner Park.	1.4	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 			-		\$440,000
25	3H	6.03-1	Belly Button Hill	Belly Button Hill Vacant Property Green Infrastructure	Green Infrastructure	Install green infrastructure on vacant properties where opportunities exist.	<ul style="list-style-type: none"> Water quality Enhances aesthetics Community engagement Reduces need for stormwater storage 	<ul style="list-style-type: none"> Limited stormwater storage volume Poor infiltration Vacant parcels not connected to severe flooding areas Requires maintenance 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will provide extra storage to relieve in-street flooding throughout neighborhood.	1.0	<ul style="list-style-type: none"> Topographic survey 	-	-	-		\$880,000
26	3I	6.03-1	Belly Button Hill	New Midlothian Creek Outfall	New Storm Sewer and Outfall	Design and construct a new storm sewer line from Belly Button Hill Park to a new outfall at Midlothian Creek. The new storm sewer line would offload flooding from 151st Street to new outfall located upstream of existing outfall at 151st Street.	<ul style="list-style-type: none"> Alleviates flooding along 151st Street and at 151st Street/Keeler Avenue outfall to Midlothian Creek 	<ul style="list-style-type: none"> Requires agency approval for new outfall and coordination and approval from Park District Requires land acquisition to access new location for outfall to Midlothian Creek 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will relieve in-street flooding along 151st Street and at 151st Street/Midlothian Creek outfall.	0.8	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	-	N/A		\$600,000
27	4D	6.04-1	Bremen Heights	Kolmar Avenue Culvert	Culvert	Widen and stabilize existing ditch along 145th Street and construct culvert at Kolmar Avenue.	<ul style="list-style-type: none"> Provides bank stabilization to protect channel from erosion Public right-of-way Provides opportunity for water quality treatment Opportunity for habitat restoration 	<ul style="list-style-type: none"> Green infrastructure requires maintenance May not provide enough storage to solve flooding issues at 145th Street 	<ul style="list-style-type: none"> Village MWRD Grants and partnerships 	Will increase capacity of existing ditch system and alleviate in-street flooding downstream at Kenneth Avenue and at Bremen Heights Park.	1.1	<ul style="list-style-type: none"> Storm sewer televising and cleaning Topographic survey Storm sewer modeling 	+	+	+		\$560,000

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28	5C	6.05-1	Natalie Creek	Kenton Avenue Detention Basins	New Wet Detention Basin	Construct two new detention basins along Kenton Avenue within resultant Natalie Creek 100-year floodplain. Includes opportunities for additional conveyance to basin.	<ul style="list-style-type: none"> • Provide significant overflow storage from Kilpatrick Avenue and 149th Street • Prevent overland flow from Natalie Creek during storm events and protect homes in resultant 100-year floodplain • Properties are Village-owned and vacant 	<ul style="list-style-type: none"> • Expensive to construct large detention basins • Requires maintenance 	<ul style="list-style-type: none"> • MWRD • Village • Grants and partnerships 	Will provide overflow storage from Natalie Creek and alleviate in-street and flooding on private properties for homes at Kenton Avenue and downstream Kolmar and Kilbourn Avenues.	1.9	<ul style="list-style-type: none"> • Storm sewer televising and cleaning • Topographic survey • Storm sewer modeling 	+	-	+	-	\$1,100,000
29	5D	6.05-1	Natalie Creek	Natalie Creek Trail	Recreational Trail System	Leverage MWRD's investment along Natalie Creek to install a multi-use trail with lighting, benches, and signage, as well as green infrastructure.	<ul style="list-style-type: none"> • Opportunities for partnerships between Village, Oak Forest, Crestwood, Robbins • Water quality • Could increase flood protection • Opportunity to enhance aesthetics • Connects to other trails and surrounding communities 	<ul style="list-style-type: none"> • Requires coordination with surrounding municipalities, Cook County Forest Preserve, among others • Limited storage volume from green infrastructure improvements • Requires maintenance of green features 	<ul style="list-style-type: none"> • MWRD • Village • Grants and partnerships 	Green infrastructure features will provide additional storage for overbank flooding from Natalie Creek.	N/A	<ul style="list-style-type: none"> • Topographic survey 	N/A	-	N/A	N/A	N/A
30	5E	6.05-1	Natalie Creek	Property Buy-Outs Along Natalie Creek	Property Buy-Outs	Properties within the Natalie Creek floodplain that are susceptible to flooding above the 25-year event can be acquired and rehabilitated to store and retain stormwater.	<ul style="list-style-type: none"> • Potential partnership with MWRD's flood-prone property acquisition program and South Suburban Land Bank • Increase storage and protection along Natalie Creek 	<ul style="list-style-type: none"> • Requires coordination and approval from private property owners 	<ul style="list-style-type: none"> • MWRD's Buyout Program • Village • Property owners 	Will alleviate in-street and private property flooding at various locations along Natalie Creek.	N/A	N/A	N/A	-	N/A	N/A	N/A
31	6A	N/A	Village-wide	Green Infrastructure Across Village	Program	Installing green infrastructure on private and public properties including rain barrels, pervious driveways, rain gardens, and bioretention basins	<ul style="list-style-type: none"> • Opportunities on public land • Partnership with property owners • Water quality treatment • Opportunity for habitat restoration • Opportunity to enhance aesthetics • Opportunities for engagement 	<ul style="list-style-type: none"> • Requires coordination and approval from Midlothian Park District (on park sites) and private property owners • Green infrastructure will not provide the required storage volume to solve the Village's flooding issues • Requires maintenance for green infrastructure 	<ul style="list-style-type: none"> • MWRD's GI Grant Program • Village • Grants and partnerships • Individual property owners 	Will help alleviate both flooding on private properties and in-street flooding.	N/A	N/A	N/A	N/A	N/A	N/A	N/A